AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1.   (canceled).

2.   (currently amended):   ~~Method according to claim 1,~~

A method of processing IP packets at layer three level in a telecommunication equipment, the equipment comprising a first box containing layer 4 protocols, and a second box containing hardware interfaces and layer 2 drivers, the method comprising the following steps in the following order, which are performed by a first termination block:

in the incoming direction:

validating IP packets by performing checks,

managing options field by interpreting all the options that said first termination block understands and preserving unaltered all other options ,

filtering,

deciding first next layer and forwarding;

in the outgoing direction:

managing redirect by checking if the packet that is going to be sent satisfies the following conditions:

the IP packet has been received from a same interface over which the IP packet is going out,

the source address belongs to a sub-network of a next-hop,

there is no source route option,

managing TTL by considering a valid packet any IP packet addressed to the

equipment and with TTL equal to zero,

managing source address,

managing options field by interpreting all the options that said first termination

block understands and preserving unaltered all other options,

fragmenting packets when the packet to be routed has a size greater than a Maximum

Transmission Unit,

wherein, in case of IP packets originated from or destined to the equipment, said method

further comprising the following steps in the following order, which are performed by a second

termination block in the incoming direction, after the first next layer decision and forwarding

step:

validating the IP packets by performing checks,

reassembling incoming fragmented packets,

managing options field by interpreting all options that said second termination

block understands,

deciding second next layer by stripping the header and forwarding the payload to

the upper client layers using the protocol as selector;

in the outgoing direction, before the step of managing redirect:

multiplexing IP payloads coming from different upper layer protocols,

managing options field , and

generating IP headers.

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3.   (previously presented):   Method according to claim 2, wherein, in case of IP

packets to be emitted by the equipment, the following steps are performed by a connection block:

in the incoming direction, after the step of deciding first next layer and forwarding:

performing a first lookup step in order to decide the destination of the incoming

packet,

in the outgoing direction, before the step of managing redirect and after the step of

generating the IP header:

performing a second lookup step in order to decide the destination of the outgoing

packet.

4.   (previously presented):   Method according to claim 3, wherein, in case of IP in IP

tunneling, in the incoming direction, after the step of deciding first next layer and forwarding and

before the first lookup step, comprises the following steps, which are performed by a tunnel

termination block in the following order:

determining which headers must be stripped,

stripping the tunnel headers,

processing the TTL of the stripped headers with the exception of the first one

already processed in a preceding step,

processing the CRC of all the stripped headers with the exception of the first one

already processed in a preceding step,

and the following steps are performed by the first termination block:

validating the IP packets by performing checks,

managing options field by interpreting all the options that said first termination block understands and preserving unaltered all the other options,

filtering,

deciding third next layer and forwarding;

in the outgoing direction, after the second lookup step and before the step of managing redirect, it further comprises the following steps, which are performed by the first termination block in the following order:

managing redirect by checking if the packet that is going to be sent satisfies the following conditions:

the IP packet has been received from a same interface over which the IP packet is going out,

the source address belongs to a sub-network of a next-hop,

there is no source route option,

managing TTL by considering a valid packet any IP packet addressed to the equipment and with TTL equal to 0,

managing source address,

managing options field by interpreting all the options that said first termination block understands and preserving unaltered all other options,

fragmenting said packet when the packet to be routed has a size greater than said Maximum Transmission Unit;

and the following steps performed by said tunnel termination block:

determining which tunnels must be created,

validating IP address of the incoming packet versus tunnel addresses,

making address translation from client receiver to tunnel endpoint address and vice versa,

inserting of external header,

processing the external header fields forcing the fragmentation flag to "do not fragment" value,

processing the external header options field,

calculating external header checksum,

making path MTU recovery,

in case errors occurred in transmission, sending ICMP messages to the originator of the messages being routed in the tunnel.

5.   (previously presented):   Method according to claim 3, further comprising the following steps which are performed by a MPLS box:

in the incoming direction, before the first IP packet validation step:

input processing MPLS packets,

in the outgoing direction, after the second lookup step:

output processing an MPLS packet.

6.   (previously presented):   Method according to claim 4, further comprising the following steps which are performed by a MPLS box:

in the incoming direction, before the first IP packet validation step:

input processing MPLS packets,

in the outgoing direction, after the second lookup step:

output processing an MPLS packet.

7.   (previously presented):   Method of processing MPLS packets at layer three level
in a telecommunication equipment, the equipment comprising a first box containing layer 4
protocols, and a second box containing hardware interfaces and layer 2 drivers, the method
comprising the following steps in the following order, which are performed by a MPLS box:

in the incoming direction:

counting received frames and number of octets through an incoming termination
block of said MPLS box,

validating MPLS packets against label range through said incoming termination
block,

determining an interface identification through said incoming termination block,

counting received packets and number of octets through a first incoming
adaptation block of said MPLS box,

stripping an external MPLS header retrieving stripped information through said
first incoming adaptation block,

looking up for a destination of an incoming MPLS packet through a connection
block of said MPLS box,

deciding next layer based at least on End_of_Stack flag through a termination
block of said MPLS box,

forwarding to the next layer through said termination block ,

managing TTL through a second incoming adaptation block and through an
adaptation block of said MPLS box ,

if next-hop is not the equipment itself, determining PHB through said second

incoming adaptation block and through said adaptation block ;

in the outgoing direction:

extracting TTL from a received outgoing client packet through said adaptation

block,

passing on the received outgoing client packet as a stripped MPLS packet together

with FEC, PHB, TTL through said adaptation block,

generating an End_of_Stack bit through said termination block,

passing on the stripped MPLS packet together with FEC, PHB, TTL and

End_of_Stack through said termination block,

looking up for the destination of outgoing client packets with FEC originated by

the equipment through said connection block,

managing TTL through an outgoing adaptation block of said MPLS box;

creating a new MPLS header and setting EXP bits according to said PHB through

said outgoing adaptation block,

counting transmitted packets and number of octets through said outgoing

adaptation block,

performing MPLS fragmentation and passing on MPLS packet, PHB, and Next

Hop through an outgoing termination block of said MPLS box.

8.   (previously presented):   Method according to claim 7, wherein, in case of

multiple MPLS encapsulation,

in the incoming direction, the processing steps are repeated on stripped MPLS packet;

in the outgoing direction, all the MPLS labels required for multiple MPLS encapsulation are pushed during one MPLS header creation step.

9.   (previously presented): Method according to claim 7, wherein, in case of penultimate hop,

in the incoming direction, the client packet is forwarded to the lower layer, is stripped and emitted.

10.   (previously presented): Method according to claim 8, wherein, in case of penultimate hop,

in the incoming direction, the client packet is forwarded to the lower layer, is stripped and emitted.

11.   (original): Method according to claim 7, wherein the client packet is an IP packet.

12.   (original): Method according to claim 7, wherein the client packet is an Ethernet frame.

13.   (canceled).

14.   (canceled).

15.   (canceled).